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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/721,479	11/22/2000	Doris Coit	PP01617.002	2173

7590 10/06/2004

ALISA A. HARBIN, ESQ.
CHIRON CORPORATION
INTELLECTUAL PROPERTY - R440
P.O. BOX 8097
EMERYVILLE, CA 94662-8097

EXAMINER	
CHEN, STACY BROWN	
ART UNIT	PAPER NUMBER
1648	

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/721,479	COIT ET AL.	
	Examiner	Art Unit	
	Stacy B Chen	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5,7,8,10-19,32,46-48 and 50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5,7,8,10-19,32,46-48 and 50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/30/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 24, 2004 has been entered.

2. Applicant's amendment filed August 24, 2004 is acknowledged and entered. Claims 1, 5, 7, 8, 10-19, 32, 46-48 and 50 are pending and under examination.

3. The rejection of claims 1, 4-19, 32 and 43-50 under 35 U.S.C. 112, first paragraph, as containing new matter, is either moot in view of cancelled claims or withdrawn in view of Applicant's amendment.

Claim Rejections - 35 USC § 102

4. Claims 1, 5 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Bartenschlager *et al.* (*J. Virology*, 1993, 67(7):3835-3844, herein, "Bartenschlager"). The claims are drawn to an isolated, immunogenic, mutant non-structural (NS) HCV polypeptide comprising a mutant NS3 polypeptide, an NS4 polypeptide and an NS5 polypeptide, wherein the mutant NS3 polypeptide has an N-terminal deletion that functionally disrupts the catalytic domain of NS3 and further wherein said polypeptide comprises an amino acid sequence corresponding to

amino acids 1242-1657 of HCV-1. Also claimed is a polypeptide consisting of the mutant NS3, NS4 and NS5. The polypeptides can be in a pharmaceutically acceptable excipient.

Bartenschlager discloses an N-terminally truncated NS3 polypeptide, additionally comprising NS4 and NS5 polypeptides. The N-terminally truncated NS3 polypeptide, which begins at RNA residue 3348 which corresponds to amino acid 1116 of the NS3 polypeptide (page 3841, Figure 8A), does not have catalytic activity. Bartenschlager's polypeptide corresponds to amino acids 1116-2344, which encompasses Applicant's polypeptide comprising amino acids 1242-1657. Regarding the claim limitation of a pharmaceutically acceptable excipient, the polypeptide encoded by Figure 8A was purified and would have necessarily been temporarily stored in an inert carrier until it was used. Therefore, the claims are anticipated by Bartenschlager.

5. Claims 1, 19, 32, 46, 48, and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Houghton *et al.* (EP 693687, herein, "Houghton"). The claims are drawn to further limitations of claim 1. The mutant polypeptide can be comprised of SEQ ID NO: 9, or consist of SEQ ID NO: 9. The polypeptide comprising or consisting of SEQ ID NO: 9 can be in a composition with a pharmaceutically acceptable excipient.

Houghton discloses combinations of HCV antigens for use in immunoassays to detect anti-HCV antibodies. The combinations comprise truncated NS3 (preferably having at least amino acids 1192-1457 of NS3 immunodominant epitope), C, S, NS3, NS4, NS5 and SEQ ID NO: 9, see claims 1-14, figure 1, and page 4, lines 25-27. Since Houghton teaches SEQ ID NO: 9, and Applicant claims that the mutant NS3 polypeptide can comprise/consist of SEQ ID NO: 9,

then the claims are anticipated. Regarding the limitation of a pharmaceutically acceptable excipient, the presence of the SEQ ID NO: 9 in an immunoassay encompasses Applicant's polypeptide in a composition with an acceptable excipient.

Claim Rejections - 35 USC § 103

6. Claims 7, 8, 10-18, 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartenschlager as applied to claims 1, 5 and 19 above, and further in view of Houghton. The claims are drawn to further limitations of claim 1, wherein the NS4 and NS5 polypeptide portions of the mutant NS3 polypeptide consist of NS4a, NS4b, NS5a or NS5b. The mutant polypeptide also contains a structural HCV polypeptide, such as the core (C) or envelope (E) protein of HCV. The C protein can be truncated at amino acid 121. The E protein can be E1 or E2. The teachings of Bartenschlager are summarized above. Bartenschlager is silent on the use of NS4a, NS4b, NS5a, NS5b, C and E proteins.

However, Houghton discloses combinations of HCV antigens for use in immunoassays to detect anti-HCV antibodies. The combinations comprise truncated NS3 (preferably having at least amino acids 1192-1457 of NS3 immunodominant epitope), C, S, NS3, NS4, NS5 and SEQ ID NO: 9, see claims 1-14, figure 1, and page 4, lines 25-27. Houghton teaches that the C nucleocapsid domain extends from the N-terminal to approximately amino acid 120, see page 4, lines 3-7. It is preferred that the C domain antigen comprise a majority of the entire sequence of the domain, which ends at amino acid 120, see page 4, lines 19-20. It would have been obvious to incorporate the antigens of Houghton into the truncated NS3 polypeptide of Bartenschlager. One would have been motivated by the suggestion in Bartenschlager that NS3 may represent a

novel target for antiviral drug development (page 3843, second column, last paragraph). The various combinations of HCV proteins would have been obvious because E, C, NS3, NS4 and NS5 are well-known in immunogenic compositions, as evidenced by Houghton. One would have had a reasonable expectation of success that the mutant NS3 with various HCV antigenic components would have worked as a diagnostic or immunogen because Houghton discloses the use of truncated NS3 and other HCV antigens (structural and non-structural) in diagnostics and pharmaceuticals. Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made.

Conclusion

7. No claim is allowed.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stacy B. Chen whose telephone number is 571-272-0896. The examiner can normally be reached on M-F (7:00-4:30). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James C. Housel can be reached on 571-272-0902. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

SBC
Stacy B. Chen
September 23, 2004

JAMES HOUSEL 10/1/04
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600